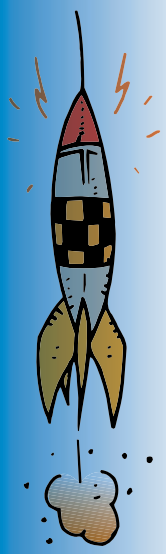
Volume 4
Issue 5

Space Nutrition

Pumping Iron



Iron is a very important mineral that has many functions in your body. Iron works with proteins in the body to produce energy from fat and carbohydrate in your diet. In fact, if you don't eat enough iron, you will get tired more easily and you may not be as alert during school.

Iron is also important for transporting oxygen in blood to all of your tissues and organs. Iron is stored in erythrocytes (uh-rith-row-sites), or red blood cells. About two-thirds of iron in the body is stored in erythrocytes. Erythrocytes act like a delivery truck full of oxygen that delivers oxygen to the areas that need it.

Iron deficiency can happen because of a lack of iron in the diet, or excessive bleeding. Anemia is the result of a severe iron deficiency.

Iron deficiency anemia impairs brain development in infants and kids. Although iron deficiency can be reversed by adding more iron to the diet, scientists are not sure whether the effects on the brain can be reversed. So... it's important to include iron-rich foods in your diet, such as meat, eggs, dried fruits, pumpkin, and fish.

Space flight has many effects on the body - and iron and blood changes are some of the most unique. Astronauts have fewer blood cells during flight, but this does not seem to be related to not getting enough iron. In fact - we are concerned that astronauts might get too much iron during space flight. This is the opposite of concerns for people on the ground, where too often people don't get enough iron in their diets. This is very important, especially for growing kids.

Thea's Corner...

Did you ever wonder how much iron is in your cereal? Here's an experiment to test for the presence of iron in your breakfast cereal.

Materials you will need:

2 clear plastic cups	Magnet (a white magnet is best)
Your favorite cereal	Water
2 plastic ziplock bags	Paper towel
Rolling pin	An old towel

Experiment Plan

1. Fill one plastic ziplock bag with cereal and place it in the other bag.
2. Wrap an old towel around the ziplock bags filled with cereal (this will keep the bags from tearing).
2. Use the rolling pin to crush the cereal into a fine powder.
3. Pour the powder into the clear plastic cup.
4. Add water to the cup so that the cup is 2/3 full.
5. Drop the magnet into the solution and slowly swirl the cereal solution for a few minutes.
6. Carefully remove the magnet and dip the magnet into a cup of water to rinse the cereal off of the magnet.
7. What remains on the magnet?
8. When you finish, you can clean the magnet with a paper towel.

Questions to think about

1. Describe what remained on the magnet. Is this what you expected to see?
2. Try this experiment again using different kinds of cereal.

Did you know?

- The iron in red blood cells is what gives blood its red color.
- Vitamin C increases your body's ability to absorb iron from the diet. So...next time you eat some oatmeal or cereal, put some strawberry slices on top to increase your absorption of iron!

- ISS Expedition 10 Commander Leroy Chiao and Flight Engineer Salizhan Sharipov launched from Russia in October. They are scheduled to be on board the ISS until April, 2005.
- December 25 will be a special day for the crew - it is the planned day for the arrival of the next Progress vehicle cargo ship. The uncrewed cargo ship will deliver water, fuel, and supplies (including food). Progress 16 is scheduled to lift off from Kazakhstan on Dec. 23 at 4:19 p.m. CST (2219 GMT) and dock with the Station at 6:05 p.m. CST on Dec. 25 (0005 GMT Dec. 26). Do you know what GMT is? Check out the web links below to find out!

Word of the Month

antioxidant

Can you guess what this word means? Look it up in the dictionary and see if you were right. We'll have more on this next month!

Web Challenge:

Go to astronaut school and learn about many of the challenges you have to meet to be an astronaut, including survival training! Search the web for a site to help identify bugs you could eat (if you really had to - but we don't recommend eating bugs just for fun).

http://edspace.nasa.gov/astroschool/
http://spaceflight.nasa.gov/living/spaceholiday/index.html
http://edspace.nasa.gov/astroschool/hq/

Check out Thea's Bonus Page, experiments you can try, and even stuff you may have done at our website:
http://haco.jsc.nasa.gov/biomedical/nutrition/kids.shtml
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